

H.R. 5116, *The America COMPETES Act*

Supporting Science and Innovation to Strengthen American Competitiveness in the 21st Century Global Economy

The House Committee on Science and Technology passed a multi-year reauthorization of the landmark legislation, the *America COMPETES Act*, on April 28th with bipartisan support and is working toward getting the legislation through the House before the Memorial Day district work period. COMPETES was based on the 2005 National Academies' report *Rising Above the Gathering Storm*. The report found that "the scientific and technological building blocks critical to our economic leadership are eroding at a time when many other nations are gathering strength." COMPETES incorporated the science and technology recommendations from the report and was signed into law with broad bipartisan support in 2007. It expires at the end of this fiscal year.

The America COMPETES Reauthorization Act of 2010, H.R. 5116, as reported makes investments in science, innovation, and education to strengthen U.S. scientific and economic leadership, support businesses, and create jobs in the short-, mid-, and long-term. In the short-term, programs like Innovative Technology Federal Loan Guarantees address the immediate need of small- and medium-sized manufacturers. In the mid-term, the bill will strengthen regional economies through programs like Regional Innovation Clusters. To ensure scientific and technological leadership now and long into the future, the bill makes investments in basic research. The bill also includes authorization of the Advanced Research Projects Agency for Energy and Energy Innovation Hubs to help advance the U.S.'s transition to a clean energy economy and to support the growth of new sectors of the economy – and the jobs that come with them.

The bill will double authorized funding for our basic research programs—the National Science Foundation, the Department of Energy Office of Science, and the labs at the National Institute of Standards and Technology—over ten years, based on the 2007 appropriated levels. This funding trajectory falls between the steeper doubling path of the bill enacted in 2007 and the more shallow curve of the president's budget request. It provides a stable, sustainable, and achievable set of authorization levels that balance the importance of these investments with the reality of our current budget deficits.

COMPETES will foster innovation by:

- Supporting the creation of Regional Innovation Clusters, which will strengthen regional economies and advance the work done in a given field by leveraging collaboration and communication between businesses and other entities (Sec. 503)
- Conducting research on Regional Innovation Clusters to determine and distribute best practices which will extend the benefits of the program beyond the grant winners by helping all regions learn from the successes of others. This will help federal dollars go further and be spent more efficiently (Sec. 503)
- Reauthorizing the Advanced Research Projects Agency for Energy (ARPA-E) which is pursuing high-risk, high-reward energy technology development. Created in 2009, ARPA-E is modeled after DARPA which created a culture of innovation and led to breakthroughs like GPS and the Internet (Title VI, Subtitle B)
- Establishing Energy Innovation Hubs, which are multidisciplinary collaborations that support research, development, demonstration, and commercial application of advanced energy technologies, with the activities of each Hub centralized at one location where possible. Each Hub will have a single technological focus that currently presents a critical barrier to achieving our national energy innovation goals (Title VI, Subtitle C)
- Codifying the Office of Innovation and Entrepreneurship at the Department of Commerce, which will work with businesses to identify and overcome barriers to commercializing the results of research. This will speed the development and market application of the new technologies, products, processes and services that will grow our economy and create jobs (Sec. 501)
- Establishing an Innovative Services Initiative at the National Institute of Standards and Technology (NIST) to assist small- and medium-sized manufacturers in reducing their energy usage and environmental waste to improve profitability and accelerate the domestic commercialization of new products technologies, including components for renewable energy systems (Sec. 406 b)
- Directing NSF to invest at least five percent of its research budget in high-risk, high-reward basic research (Sec. 221)

Prepared by the Majority Staff of the House Committee on Science and Technology May 4, 2010

COMPETES will create jobs and support manufacturers and industry by:

- Providing innovative technology federal loan guarantees for small- and medium-sized manufacturers, to help them access capital to become more efficient and stay competitive (Sec. 502)
- Coordinating manufacturing research and development carried out across the federal government (Sec. 122)
- Authorizing the National Science Foundation (NSF) to support fundamental research leading to transformative advances in manufacturing (Sec. 223)
- Reorganizing the National Institute of Standards and Technology (NIST) labs to reflect the multidisciplinary nature of technology and better meet the needs of industry in the 21st century (Sec. 404)
- Giving NIST a role in facilitating cross-agency coordination when the federal government is involved with the development of international technical standards, a function that supplements the agency's current role in helping develop technical standards within the U.S, to help drive competition, increase product choices, and lower costs (Title IV)
- Ensuring that the Manufacturing Extension Partnership program at NIST better reflects the needs and challenges facing manufacturers today (Sec. 406)
- Providing Manufacturing Extension Partnership program centers with 50 percent of the cost incurred to run the center, an increase from the federal government's previous one-third cost share contribution, which will reduce the centers' financial obligation during this difficult economic time (Sec. 406)
- Directing the Manufacturing Extension Partnership Centers to inform local community colleges of the skill sets that are needed by area manufacturers, to help ensure that students have the specific job training necessary to secure a good-paying job in their community (Sec. 406 (a))

COMPETES will improve STEM education and ensure a prepared workforce by:

- Expanding, strengthening, and aligning STEM education programs at all levels of education:
 - Updating the Robert Noyce Teacher Scholarship program, which trains highly competent secondary teachers in STEM fields to teach in high need schools, by reducing the match requirement and allowing more schools to participate in the program (Sec. 243)
 - Providing grants to increase the number and quality of students receiving undergraduate degrees in STEM and to improve the STEM learning outcomes for all undergraduate students (Title III, Sec. 303,)
 - Providing grants to implement or expand research-based reforms in master's and doctoral level STEM education that emphasize preparation for diverse careers in the STEM workforce (Sec 252)
 - Establishing fellowships to provide recent doctoral degree graduates in STEM fields with the necessary skills to assume leadership roles in STEM education research, program development, and evaluation of education programs (Sec. 242)
- Ensuring greater coordination of STEM education programs across federal agencies (Sec. 301)
- Increasing participation by women and minorities in STEM fields to strengthen and diversify the STEM workforce:
 - Providing institutional integration grants to help colleges and universities increase retention, recruitment and degree attainment of underrepresented groups in STEM by looking for synergies across scattered campus efforts (Sec 245)
 - Ensuring that smaller institutions, including minority serving institutions, are integrated more fully into research partnerships with research universities (Sec. 250 (2))
 - Prioritizing the inclusion of minority serving institutions under the Partnerships for Innovation program (Sec. 227)
 - Ensuring that agency staff are trained in effective practices in broadening participation (Sec. 247)

COMPETES will support research by:

- Including a comprehensive reauthorization of the Department of Energy's Office of Science, the single largest supporter of research in the physical sciences in the U.S., and keeping it on a doubling path (Title IV- Subtitle A)
- Reauthorizing NSF, which supports fundamental research and education in all the non-medical fields of science and engineering, and keeping it on a doubling path (Title II)
- Reauthorizing NIST labs, which conduct research to advance the nation's technology infrastructure and support industry, and keeping them on a doubling path (Sec. 402)